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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,743	03/05/2007	Tsutomu Sasao	060323	8889
21874	7590	03/30/2010	EXAMINER	
EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205				KIK, PHALLAKA
ART UNIT		PAPER NUMBER		
2825				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/579,743	SASAO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	PHALLAKA KIK	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 5/18/2006 AND 3/5/2007.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 8-16 is/are rejected.  
 7) Claim(s) 1-7 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 18 May 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/18/06</u> .   | 6) <input type="checkbox"/> Other: _____ .                        |

## **DETAILED ACTION**

1. This Office Action responds to the Application, preliminary amendment and IDS filed on 5/18/2006. Claims 1-16 are pending, wherein 1-8,10-12,14-16 have been amended and claim 17 have been canceled.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because the abstract contains two paragraphs. Correction is required. See MPEP § 608.01(b).

5. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### ***Arrangement of the Specification***

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in

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upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

#### **Content of Specification**

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).

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- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
- (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
  - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where

elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing: See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

6. The disclosure is objected to because of the following informalities: there is no brief description of the invention being given and the contents and arrangement for US Patent application are not properly followed as given above (i.e., Disclosure of the Invention, Best Mode of Carrying the Invention should be combined to become part of the Detailed Description of the Invention). Applicant may also want to include the

section Crossed References to Related Application since Applicant's invention involves claimed foreign priority data.

Appropriate correction is required.

***Claim Objections***

7. **Claims 1-16** are objected to because of the following informalities:

As per **claim 1**, "the Width of Graph" (line 1) should be --a Width of a Graph-- for proper antecedent basis; "the width" (line 2) should be --a width--; "the Binary" (line 2) should be --a Binary--; "the output" (line 5) should be --output--; "the output" (lines 6-7) should be --an output-- for proper antecedent basis; --said device-- should be inserted before "comprising" (line 7) for greater clarification; "the table" (line 8) should be --a table--; "the labels" (line 9) should be --labels--; "the variables" (line 10) should be --variables--; "said each" (line 11) should be --each--; "the next" (line 13) should be --to next-- for proper antecedent basis and for proper grammar; "the input values" (line 13) should be --input values--; "the Dividing" (line 15) should be --Dividing--; "the height of the partition" (line 15) should be --a height of a partition--; "the column" (line 19) should be --a column--; "the decomposition" (line 19) should be --a decomposition--; "the functional" (line 19) should be --a functional--; "the constants" (line 23) should be --constants--; "the don't care" (lines 23-24) should be --don't care--; "the compatible" (line 24) should be --compatible--; "makes" (line 25) should be --assigns-- for greater clarification; "(hereafter, assigned column functions)" (lines 26-27) should be deleted for greater clarification; "the new" (line 27) should be --new--; --wherein Equation (1) is defined as follows:-- should be inserted after "Table," (line 28) to define the equations;

"the OFF", "the ON", "the DC" (line 31) should be --OFF--, --ON--, --DC--; --wherein Equation (2) is defined as follows-- should be inserted after "respectively, " (line 32); the variables in the equations such as X, Y, m, i are not defined.

As per **claim 2**, "the compatible graph" (line 4) should be --compatible graph-- for proper antecedent basis; "that" (line 5) should be --which-- for proper grammar; "said each" (line 5) should be --each function node--; "the data" (line 6) should be --data--; --of-- should be inserted after "pair" (line 8) for proper grammar; --with-- should be inserted after "compatible" (line 8) for proper grammar; "the pair" (line 10) should be --a pair--; "the set" (line 11) should be --a set--; "the minimum" (line 16) should be --a minimum--; --wherein-- should be inserted after "and" (line 18); --further-- should be inserted before "generates" (line 19); --wherein-- should be inserted after "and" (line 24); --further-- should be inserted before "reconstructs" (line 25); "making...to" (line 26) does not make any sense, perhaps replacing "to" (line 26) with --into--.

As per **claim 3**, --further-- should be inserted before "sets" (line 3) to further define the means; "the root" (line 4) should be --a root-- for proper antecedent basis; "the low" (lines 5-6) should be --a low--; --further-- should be inserted before "reconstructs" (line 7) to further define the means.

As per **claims 2-3**, the claims are also objected to for incorporating the above errors into the respective claims by claim dependency.

As per **claim 4**, "the data" (line 2) should be --data-- for proper antecedent basis; "said" (line 2) should be --a--; --(Binary Decision Diagram for Characteristic Function)-- should be inserted after "BDD\_for\_CF" (line 3) to define the term; --said device-- should

be inserted before "comprising" (line 4) for greater clarification; "the characteristic" (lines 5-6) should be --a characteristic-- for proper antecedent basis; "the node table" (line 7) should be --a node table--; "the table" (line 7) should be --a table--; "the labels" (line 8) should be --labels--; "the variables" (line 10) should be --variables--; "said each" (line 11) should be --each--; "the next" (line 12) should be --to next-- for proper grammar; "the input" (line 12) should be --input--; "the Dividing" (line 15) should be --Dividing--; "the height of the partition" (line 12) should be --a height of a partition--; "that is the" (line 15) should be --which is a-- for proper grammar and for proper antecedent basis; "the edge" (line 16) should be --edge--; "the node" (line 16) should be --a node--; "the parent" (line 17) should be --a parent--; "the edge" (line 17, both occurrences) should be --an edge--; "the terminal" (line 18) should be --a terminal--; "the edges" (line 19) should be --edges--; "the variable" (line 20) should be --a variable--; "the subgraph" (line 21) should be --a subgraph--; "the root" (line 21) should be --a root--; "the two" (line 23) should be --two--; "the partition" (line 23) should be --a partition--; "the Width" (line 25) should be --a Width--; "the number" (line 25) should be --a number--; "the child" (line 26) should be --child--; --to-- should be inserted after "pointing" (line 30) for proper grammar; "to point the constant" (line 31) should be --pointing to a constant-- for proper grammar and for proper antecedent basis; --of the edges-- should be inserted after "number" (line 31) for greater clarification; "the width" (line 31) should be --a width--; --; wherein Equation (3) and Equation (4) are defined as follows:-- should be inserted after "BDD\_for\_CF" (line 44); the variables in the equations such as X,Y,m,i are not defined.

As per **claim 5**, --to-- should be inserted after "points" (line 11) for proper grammar; --wherein Equation (5) is defined as follows: -- should be inserted after "0 and 1" (line 12); the variables in the equations such as V, d are not defined; "the OFF", "the ON", "the DC" (line 13) should be --OFF--, --ON--, --DC-- respectively; --wherein Equation (6) is defined as follows:-- should be inserted after "respectively, " (line 14).

As per **claim 6**, "said" (line 3) should be deleted for proper antecedent basis; "the BDD\_for\_CF" (line 4) should be --a BDD\_for\_CF (Binary Decision Diagram for Characteristic Function)-- for proper antecedent basis and for properly defining the term; --said device-- should be inserted before "comprising" (line 5) for greater clarification; "the characteristic" (lines 6-7) should be --a characteristic--; "the node" (line 8) should be --a node--; "the table" (line 8) should be --a table--; "the labels" (line 9) should be --labels--; "variables" (line 11) should be --variables--; "said each" (line 12) should be --each--; "the next" (line 13) should be --to next-- for proper grammar and for proper antecedent basis; "the input" (line 13) should be --input-- for proper antecedent basis; "the Dividing" (line 16) should be --Dividing--; "the height of the partition" (line16) should be --a height of a partition--; "that is the" (line 19) should be --which is a-- for proper grammar and for proper antecedent basis; "the edge" (line 20) should be --edge--; "the node" (line 20) should be --a node--; "the parent" (line 21) should be --a parent--; "the edge" (line 21, both occurrences) should be --an edge--; "the terminal" (line 22) should be --a terminal--; "the variable" (line 24) should be --a variable--; "the subgraph" (line 23) should be --a subgraph--; "the root" (line 24) should be --a root--; "the two subgraphs" (line 26) should be --two subgraphs--; "the partition line" (line 26) should be --a partition

line--; "the Width" (line 28) should be --Width--; "the edges" (lines 28-29) should be --edges--; "the child" (line 29) should be --child--; "the non-terminal" (line 29) should be --non-terminal--; "the constant" (line 34) should be --to a constant-- for proper antecedent basis and for proper grammar; --of edges-- should be inserted after "number" (line 34); "the width" (line 34) should be --a width--; "the Intermediate" (line 36) should be --Intermediate--; --, wherein Equation (3) and Equation (4) are defined as follows:-- should be inserted after "BDD\_for\_CF" (line 50); the variables in the equations such as i, m, Y, X, y are not defined; "the output" (line 58) should be --output--; "the next" (line 65) should be --to next-- for proper grammar and for proper antecedent basis; --wherein Equation (5) is defined as follows: -- should be inserted after "0 and 1" (line 66); "the OFF", "the ON", "the DC" (line 69) should be --OFF--, "ON", "DC" respectively; -- wherein said Equation (6) is defined as follows:-- should be inserted after "respectively," (line 70); the variables in the equation such as i, m, y, X, d are not defined; "the device comprises the "Device for Reducing the Width of Graph" according to claim 1, and" (lines 74-75) should be deleted for greater clarification since it seems that the device of claim 1 is already incorporated; "by said "Device for Reducing the Width of Graph"" (lines 77-78) should be deleted for greater clarification since it seems that the device of claim has already been incorporated; "the updated" (line 78) should be --updated--.

As per **claim 7**, --further-- should be inserted after "device" (line 2) to define the further limitations; "the Ordering" (line 3) should be --Ordering-- for proper antecedent basis; "the order" (line 3) should be --order--; "the value" (line 4) should be --a value--; "the set" (line 7) should be --a set--; "the Ordering" (line 9) should be --Ordering--; "the

"Variables" (line 9) should be --Variables--; "the order of the variables" (line 9) should be --an order of variables--; "the outputs" (line 10) should be --outputs--; "the order" (line 10) should be --an order--; --, wherein Equation (7) and Equation (8) are defined as follows: -- should be inserted after "BDDs" (line 14); the variables in the equations such as i, k, m are not defined.

As per **claim 8**, "the Width of Graph" (line 1) should be --a Width of a Graph-- for proper antecedent basis; "the width" (line 2) should be --a width--; "the BDD\_for\_CF" (line 2) should be --a BDD\_for\_CF (Binary Decision Diagram for Characteristics Function)--; "the system" (line 2) should be --a system--; "the node table" (line 3) should be --a node table--; "the table" (line 3) should be --a table--; "the labels" (lines 3-4) should be --labels--; "the output" (line 6) should be --output--; "the output" (line 8) should be --an output--; "the variables" (line 9) should be --variables--; "said" (line 9) should be deleted; "the next" (line 11) should be --to next-- for proper antecedent basis and for proper grammar; "the input values" (line 11) should be --input values--; --the method-- should be inserted before "comprising" (line 12) for greater clarification; "the height of the partition" (line 13) should be --a height of a partition--; "the column" (line 17) should be --a column--; "the decomposition" (line 17) should be --a decomposition--; "the functional" (line 17) should be --a functional--; "the constants" (line 21) should be --constants--; "the don't care" (lines 21-22) should be --don't care--; "the compatible" (line 22) should be --compatible--; "makes" (line 23) should be --assigns-- for greater clarification; "(hereafter, assigned column functions)" (line 24) should be deleted for greater clarification; "the new" (line 25) should be --new--; --wherein Equation (9) is

defined as follows:-- should be inserted after "Table," (line 26) to define the equations; "the OFF", "the ON", "the DC" (line 29) should be --OFF--, --ON--, --DC--; --wherein Equation (10) is defined as follows-- should be inserted after "respectively, " (line 30); the variables in the equations such as X, Y, m, i are not defined.

As per **claim 9**, --further-- should be inserted after "system" (line 3) to define the further limitation; "the compatible graph" (lines 3-4) should be --compatible graph-- for proper antecedent basis; "that" (line 4) should be --which-- for proper grammar; "said each" (line 5) should be --each function node--; "the data" (line 5) should be --data--; --said method further-- should be inserted before "comprising" (line 8) to further define the limitations; --wherein should be inserted before "said Step" (line 9); "in which, " (line 9) should be --further--; "the set" (line 15) should be --a set--; "the minimum" (lines 20-21) should be --a minimum--; --wherein-- should be inserted after "and" (line 22); "which" (line 24) should be --further--; "making...to" (line 25) does not make any sense, perhaps replacing "to" (line 26) with --into--.

As per **claim 10**, "is" (line 1) should be --are-- for proper grammar since there are more than one steps being performed; "the height" (line 4) should be --a height--; "the child" (line 5) should be --a child--; "the root" (line 5) should be --a root--; "the lower" (line 6) should be --a lower--.

As per **claim 11**, "the data" (line 2) should be --data-- for proper antecedent basis; "said" (line 2) should be --a--; "the BDD\_for\_CF" (line 3) should be --a BDD\_for\_CF (Binary Decision Diagram for Characteristic Function)-- to define the term; "the system" (line 4) should be --a system--; "the characteristic" (line 6) should be --a

characteristic-- for proper antecedent basis; "the node table" (line 8) should be --a node table--; "the table" (line 8) should be --a table--; "the node data" (line 8) should be --node data--; "the labels" (line 9) should be --labels--; "the variables" (line 11) should be --variables--; "said" (line 11) should be deleted; "the next" (line 13) should be --to next-- for proper grammar; "the input" (line 14) should be --input--; --said method further-- should be inserted before "comprising" (line 15); "the height of the partition" (line 16) should be --a height of a partition--; "that is the" (line 19) should be --which is a-- for proper grammar and for proper antecedent basis; "the edge" (line 20) should be --an edge--; "the node" (line 20) should be --a node--; "the parent" (line 21) should be --a parent--; "the edge" (line 21, both occurrences) should be --an edge--; "the terminal" (line 22) should be --a terminal--; "the variable" (line 24) should be --a variable--; "the subgraph" (line 25) should be --a subgraph--; "the root" (line 25) should be --a root--; "the two" (line 27) should be --two--; "the partition" (line 27) should be --a partition--; "the Width" (line 29) should be --a Width--; "the number" (line 29) should be --a number--; "the child" (line 30) should be --child--; --to-- should be inserted after "pointing" (line 34) for proper grammar; "to point the constant" (line 35) should be --pointing to a constant-- for proper grammar and for proper antecedent basis; --of the edges-- should be inserted after "number" (line 35) for greater clarification; "the width" (line 36) should be --a width--; "the number of the intermediate" (lines 37-38) should be --a number of intermediate--; -;- (semicolon) should be inserted after "height" (line 42); --wherein Equation (11) and Equation (12) are defined as follows-- should be inserted after "BDD\_for\_CF" (line 49); the variables in the equations such as X,Y,m,i are not defined.

As per **claim 12**, --,-- (coma) should be inserted after "Claim 11" (line 2) for proper grammar; --to-- should be inserted after "points" (line 11) for proper grammar; -- wherein Equation (13) is defined as follows: -- should be inserted after "0 and 1" (line 12); the variables in the equations such as V, d are not defined; "the OFF", "the ON", "the DC" (line 15) should be --OFF--, --ON--, --DC-- respectively; --wherein Equation (14) is defined as follows:-- should be inserted after "respectively, " (line 16); the variables in the equations such as m, i, X, Y are not defined.

As per **claim 13**, "which" (line 2) should be --further-- to define the further limitations; "by the Method to Reduce the Width of Graph according to any one of Claims 8 to 10, " (lines 3-4) should be deleted for greater clarification since it seems that the elements of claims 8 to 10 are already incorporated in the claims.

As per **claim 14**, "; performing the following three steps" should be deleted for greater clarification; "BDD;" (line 3) should be replaced with --said method further performs:--; "the order" (line 4) should be --order--; "the value" (line 5) should be --a value--; "the set" (line 8) should be --a set--; "the Variables" (line 10) should be -- Variables--; "the order of the variables" (lines 10-11) should be --an order of variables--; "the outputs" (line 11) should be --outputs--; "the order" (line 11) should be --an order--; --, wherein Equation (16) and Equation (17) are defined as follows: -- should be inserted after "BDDs, " (line 15); the variables in the equations such as i, k, m, supp are not defined.

As per **claims 15-16**, the claims are objected to for incorporating the above errors into the respective claims by claim dependency.

Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. **Claims 8-14** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter, wherein the claims are directed to a method/process which is neither tied to an apparatus nor provides transformation of the subject matter to a different state or thing (see 545 F.3d 943, 88 USPQ2d 1385 (Fed. Cir. 2008)).

10. Applicant may want to insert --, performed by a computer, -- after before "assigning" (line 21, claim 8) to properly tie the process/method to an apparatus (i.e., a computer).

11. Applicant may want to insert --, by a processor, -- after "executing" (line 18, claim 11) to properly tie the process/method to an apparatus.

12. **Claims 15-16** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter, wherein the claims are directed to "computer program" per se which is NOT embodied in a non-transitory computer readable medium, to properly impart functionality when employed as a computer component (see MPEP section 2106.01; In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994); In re Warmerdam, 33 F.3d at 1354, 1360-61, 31 USPQ2d at 1754,1759); wherein although claim 11 recites a "system" and means to store node

table and means to store LUTs", the steps of the claims are still not properly tied to an apparatus since the steps can be performed by hands, using the values from these means.

13. Applicant may want to replace "A computer program that implements" with (line 1 of claims 15 and 16) as follows:

--A non-transitory computer readable medium embedded thereon a computer program, which when executed by a computer, causes the computer to implement--

***Allowable Subject Matter***

14. **Claims 1-16** would be allowable if claims 8-16 are rewritten or amended to overcome the rejection(s) under 35 U.S.C. 101, set forth in this Office action and if claims 1-16 are rewritten to overcome the noted minor informalities objections.

15. The following is a statement of reasons for the indication of allowable subject matter:

16. As per **claims 1-3**, the claims recite a "Device for Logic Synthesis" comprising at least a combination of the inventive features comprising "Means to Generate Column Functions", "Means to Reconstruct Assigned BDD" as claimed which the prior arts made of record failed to teach or suggest.

17. As per **claims 4-7**, the claims recite a "Device for Reducing a Width of a Graph" comprising at least a combination of the inventive features comprising "Means to Reduce by Shorting", "Means to Measure the Width of BDDs", "Means to Compute the Intermediate Variables", "Means to Generate LUTs", and "Means to Re-construct BDDs", as claimed which the prior arts made of record failed to teach or suggest.

18. As per **claims 8-10,15**, the claims recite a method/computer program to Reduce the Width of Graph, comprising at least a combination of the inventive steps comprising "Step to Generate Column Functions", and "Step to Reconstruct Assigned BDD" as claimed which the prior arts made of record failed to teach or suggest.

19. As per **claims 11-14,16**, the claims recite a method/computer program for Logic Synthesis, comprising at least a combination of the inventive steps comprising "Step to Reduce by Shorting", "Step to Measure the Width of BDDs", "Step to Count the Intermediate Variables", "Step to Generate LUTs", and "Step to Re-construct BDDs", as claimed which the prior arts made of record failed to teach or suggest.

***Conclusion***

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHALLAKA KIK whose telephone number is (571)272-1895. The examiner can normally be reached on Monday-Friday, 8AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on 571-272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**Any response to this action should be mailed to:**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

**or faxed to:**

571-273-8300

/Phallaka Kik/  
Primary Examiner, Art Unit 2825  
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